

In re: Bigolin
Int.'l Appl. No.: PCT/IB2004/003224
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Amendments to the Claims:

1. (Currently Amended) A viscoelastic support structure with improved energy absorption ~~properties~~ comprising a ~~rigid or semirigid~~ frame (3), at least one layer (4) ~~made of~~ a resilient filler layer, a flexible covering (6) having a contact surface of for contact (2) with the a user, at least one gel insert (5) interposed between said covering (6) and said frame (3) ~~to interact therewith when the user exerts a stress (P) thereon, characterized in that, and a~~ plurality of protuberances (9) ~~and/or recesses (10) is provided on~~ at least one of said insert, (5) and/or said frame, (3) and/or said covering (6), said protuberances or recesses being aligned with respect to a mid-surface line extending at least partially along the length of said structure (M), said insert being conformed to facilitate the deformation of said insert (5), in a direction transverse to the direction (L) of stress (P), and/or essentially parallel to said mid-surface (M), to increase the energy that said insert (5) is able to dissipate.

2. (Currently Amended) A structure as claimed in claim 1, wherein said insert comprises a top surface and a bottom surface, and characterized in that wherein said protuberances (9) ~~and/or said recesses (10)~~ are provided on at least one of said top surface and said bottom surface (7, 7') of said insert (5).

3. (Currently Amended) A structure as claimed in claim 1, wherein said frame comprises a top surface facing toward said insert, and wherein ~~characterized in that~~ said protuberances (9) ~~and/or said recesses (10)~~ are provided ~~25~~ on a said top surface (8) of said frame (3), said top surface (8) facing toward said insert (5).

4. (Currently Amended) A structure as claimed in claim 1, wherein said flexible covering further comprises a bottom surface facing toward said insert, and ~~wherein~~ ~~characterized in that~~ said protuberances (9) ~~and/or said recesses (10)~~ are provided on a said bottom surface (6') of said flexible covering (6), said bottom surface (6') facing toward said insert (5).

5. (Currently Amended) A structure as claimed in claim 1, wherein~~characterized in~~ that said protuberances ~~(9)~~ have top surfaces ~~(11)~~ mainly extending along respective first lines.

6. (Currently Amended) A structure as claimed in claim 5, wherein~~characterized in~~ that said recesses ~~(10)~~ have bottom surfaces ~~(12)~~ mainly extending along respective second lines.

7. (Currently Amended) A structure as claimed in claim 6, wherein~~characterized in~~ that said first and second ~~extension~~ lines are curved ~~and/or straight~~.

8. (Currently Amended) A structure as claimed in claim 6, wherein~~characterized in~~ that said protuberances ~~(9)~~ ~~and/or~~ recesses ~~(10)~~ have inclined surfaces ~~(13)~~ for connecting said top surfaces ~~(11)~~ and said bottom surfaces ~~(12)~~, said inclined surfaces having with respective inclination angles ~~(A)~~ relative to said mid-surface line~~(M)~~.

9. (Currently Amended) A structure as claimed in claim 8, wherein~~characterized in~~ that said inclination angles ~~(A)~~ ~~are of~~ are from 5° to 85° ~~and preferably of about 45°~~.

10. (Currently Amended) A structure as claimed in claim 1, wherein~~characterized in~~ that said filler layer ~~(4)~~ has comprises an enlarged rear portion ~~(14)~~ ~~for supporting the~~ buttocks of a user, a front horn portion, ~~(15)~~ and a central portion ~~(16)~~, wherein at least one of said central portion ~~(16)~~ ~~and/or~~ said rear portion ~~(14)~~ having comprise at least one through cavity ~~(17)~~.

11. (Currently Amended) A structure as claimed in claim 10, wherein~~characterized in~~ that said at least one through cavity ~~of~~ is present in said rear portion ~~(14)~~ and is positioned ~~placed at~~ in an area generally corresponding to the ischial bones of the user.

12. (Currently Amended) A structure as claimed in claim 10, wherein~~characterized in that said through cavity is present in at least one of said central portion and said rear portion, and said insert-(5) is received in said through cavity-(17) of said central portion-(16) and/or said rear portion-(14).~~

13. (Currently Amended) A structure as claimed in claim 12, wherein~~characterized in that said insert-(5) extends from said frame-(3) to said flexible covering-(6).~~

14. (Currently Amended) A structure as claimed in claim 1, wherein~~characterized in that said gel insert comprises a gel material that is essentially optically transparent.~~

15. (Currently Amended) A structure as claimed in claim 1, wherein~~characterized in that said flexible covering-(6) has~~ comprises at least one essentially optically transparent portion-(18).

16. (Currently Amended) A structure as claimed in claim 15, wherein~~characterized in that said transparent portion-(18) of said flexible covering-(6) is located above said insert-(5).~~

17. (Currently Amended) A structure as claimed in claim 15, wherein~~characterized in that said transparent portion-(18) of said covering-(6) is a separate~~ comprises a portion separate from said covering, said portion being connected to the rest of said flexible covering (6) by suitable connection means.

18. (Currently Amended) A structure as claimed in claim 15, wherein~~characterized in that said transparent portion-(18) is integral with the rest of said flexible covering-(6).~~

19. (Currently Amended) A structure as claimed in claim 1, wherein~~characterized in that the base material of said frame comprises a polymeric base material, (3) is polymeric and that is essentially optically transparent to permit the passage of light through said covering (6), said gel insert (5) and said frame (3).~~

20. (Currently Amended) A structure as claimed in claim 19, ~~wherein characterized in that the base material of said frame (3) is~~ comprises a ligneous, metal or composite material; ~~said frame (3) having at least one through hole, which is covered by a polymeric and essentially optically transparent layer.~~

21. (New) A structure as claimed in claim 1, wherein said insert is adapted for deformation in a direction transverse to the direction of a stress applied to said insert.

22. (New) A structure as claimed in claim 1, wherein said insert is adapted for deformation in a direct essentially parallel to said mid-surface line.

23. (New) A structure as claimed in claim 1, wherein said insert is adapted for deformation in one or more directions thereby increasing energy dissipation by said insert.

24. (New) A structure as claimed in claim 6, wherein said first and second lines are straight.

25. (New) A structure as claimed in claim 8, wherein said inclination angles are about 45°.

26. (New) A structure as claimed in claim 1, wherein said frame comprises at least one through hole covered by a polymeric layer that is essentially optically transparent.